

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. [AMENDED] An electronics-carrying module in a seismic data acquisition cable including:

an electronics carrier having access means for providing an easy-to-reach
5 access to a wrap-around circuitry fitted inside a curved space within said electronics carrier;

a pair of rigid end-fittings spaced apart axially by said electronics carrier for connecting to a section of said seismic data acquisition cable;

an axial hole formed in said electronics carrier and said rigid end-fittings
10 defining said curved space between said axial hole, said access means and said rigid end-fittings, said axial hole is formed for accommodating a cable with an uninterrupted strength member along said seismic data acquisition cable through said electronics-carrying module; and

an inner tube enclosing a major portion of said axial hole and having at least
15 one opening thereon for connecting said wrap-around circuitry to said cable for both power and signal transmission.

2. [AMENDED] The electronics-carrying module in accordance with Claim 1, wherein said access means comprises:

a first fractional fluid-resistant tube fixed between said pair of rigid end-
20 fittings; and

a second fractional fluid-resistant tube joined to said first fractional fluid-resistant tube by sealing means so as to form said curved space between said inner tube and said access means.

3. [AMENDED] The electronics-carrying module in accordance with Claim 2,
25 wherein said second fractional fluid-resistant tube can be detached from said first fractional fluid-resistant tube by removing said sealing means.

4. The electronics-carrying module in accordance with Claim 3, wherein said first fractional fluid-resistant tube is larger in volume than said second fractional fluid-resistant tube.

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5. The electronics-carrying module in accordance with Claim 3, wherein said first fractional fluid-resistant tube is smaller in volume than said second fractional fluid-resistant tube.

6. The electronics-carrying module in accordance with Claim 3, wherein said first fractional fluid-resistant tube is equal in volume to said second fractional fluid-resistant tube.

7. The electronics-carrying module in accordance with Claim 3, wherein said sealing means comprise an elastomer ring such as rubber ring.

8. The electronics-carrying module in accordance with Claim 3, wherein said sealing means comprise a waterproof sealant.

9. The electronics-carrying module in accordance with Claim 7 or 8, wherein said sealing means further comprise a plurality of securing means selected from the group consisting of screw, clip, band, magnet, suction and adhesive material.

10. [AMENDED] The electronics-carrying module in accordance with Claim 1, wherein said access means is a movable open-ended cylinder having a diameter slightly larger than said section of said seismic data acquisition cable so that said movable open-ended cylinder can slide away from said inner tube to expose said wrap-around circuitry, said movable open-ended cylinder is attached to said pair of rigid end-fittings by means of sealing and can be detached by removing said means of sealing.

11. The electronics-carrying module in accordance with Claim 10, wherein said sealing means comprise an elastomer ring such as rubber ring.

12. The electronics-carrying module in accordance with Claim 10, wherein said sealing means comprise a waterproof sealant.

13. The electronics-carrying module in accordance with Claim 11 or 12, wherein said sealing means further comprise a plurality of securing means selected from the group consisting of screw, clip, band, magnet, suction and adhesive material.

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14. [AMENDED] The electronics-carrying module in accordance with Claim 1, wherein said inner tube is a cylindrical tube.

15. [AMENDED] The electronics-carrying module in accordance with Claim 1, wherein said inner tube is a polygonal tube.

5 16. [AMENDED] The electronics-carrying module in accordance with Claim 1, wherein said wrap-around circuitry comprises:

a first circuit board with a connection for connecting said wrap-around circuitry to said cable through said opening; and

means for securing said first circuit board to said inner tube.

10 17. The electronics-carrying module in accordance with Claim 16, wherein said wrap-around circuitry further comprises a second circuit board joined to said first circuit board by a connection means.

18. The electronics-carrying module in accordance with Claim 17, wherein said wrap-around circuitry further comprises a plurality of other circuit boards joined
15 one to another to said first circuit board by said connection means.

19. The electronics-carrying module in accordance with Claim 18, wherein said connection means comprise a bendable conductor selected from the group consisting of a bunch of wires in a ribbon cable and a flexible printed circuit board.

20 20. The electronics-carrying module in accordance with Claim 18, wherein said connection means comprise a fixed connector such as a pin-socket.

21. The electronics-carrying module in accordance with Claim 16, wherein said first circuit board is a rigid circuit board.

22. The electronics-carrying module in accordance with Claim 16, wherein said first circuit board is a flexible circuit board.

25 23. The electronics-carrying module in accordance with Claim 17, wherein said second circuit board is a rigid circuit board.

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24. The electronics-carrying module in accordance with Claim 17, wherein said second circuit board is a flexible circuit board.

25. The electronics-carrying module in accordance with Claim 18, wherein said plurality of other circuit boards are rigid circuit boards.

5 26. The electronics-carrying module in accordance with Claim 18, wherein said plurality of other circuit boards are flexible circuit boards.

27. The electronics-carrying module in accordance with Claim 1, wherein said wrap-around circuitry includes amplifying circuitry.

10 28. The electronics-carrying module in accordance with Claim 1, wherein said wrap-around circuitry includes a data acquisition unit.

29. The electronics-carrying module in accordance with Claim 1, wherein said wrap-around circuitry includes an analog-to-digital converter.

30. The electronics-carrying module in accordance with Claim 1, wherein said wrap-around circuitry includes a multiplexing circuitry.

15 31. The electronics-carrying module in accordance with Claim 1, wherein said wrap-around circuitry includes a data transmission unit.

32. The electronics-carrying module in accordance with Claim 1, wherein said wrap-around circuitry includes active control circuitry.

20 33. The electronics-carrying module in accordance with Claim 1, wherein said wrap-around circuitry includes power supply circuitry.

34. The electronics-carrying module in accordance with Claim 1, wherein said section of said seismic data acquisition cable comprises:
a portion of said cable; and
an outermost protective layer around said portion of said cable for protecting
25 said cable from the outside environment.

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35. The electronics-carrying module in accordance with Claim 34, wherein said rigid end-fitting is connected to said section of said seismic data acquisition cable by clamping said outermost protective layer to said rigid end-fitting.

36. The electronics-carrying module in accordance with Claim 34, wherein
5 said section of said seismic data acquisition cable further comprises a buoyant segment formed to fill the void underneath said outermost protective layer for providing a desired buoyancy level.

37. The electronics-carrying module in accordance with Claim 34, wherein
10 said section of said seismic data acquisition cable further comprises a layer of strength reinforcing member above said outermost protective layer, such as corrosion-resistant steel wire ropes.

38. The electronics-carrying module in accordance with Claim 36, wherein said buoyant segment includes a liquid material such as hydrocarbon fluid.

39. The electronics-carrying module in accordance with Claim 36, wherein
15 said buoyant segment includes a solid material such as polyurethane composite.

40. The electronics-carrying module in accordance with Claim 36, wherein said buoyant segment includes a gel-type material.

41. [AMENDED] An electronics-carrying module including:
a carrier defining a space for housing of electronics;
20 selectively removable access means engagable with said carrier so as to provide access to said space;
a pair of end-fittings spaced apart axially by said carrier for connection of said module to a section of a cable;
said cable having an axially extending strength member;
25 a hole disposed along said module between said end-fittings, said hole being sized so as to accommodate threading of said cable through said module such that said strength member extends axially through said module;

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an inner tube enclosing a major portion of said hole and having at least one opening thereon for connecting said electronics to said cable; and

said access means being operable to provide access to said space without decoupling or removing the module from the cable.

5 42. An electronics-carrying module according to claim 41 wherein said carrier has a substantially cylindrical outer shell.

43. An electronics-carrying module according to claim 42 wherein said curved space is disposed intermediate said hole and said outer shell.

10 44. An electronics-carrying module according to any one of claims 41 to 43 wherein said electronics is wrap-around circuitry.

45. An electronics-carrying module according to any one of claims 41 to 44 wherein said access means is operable to provide access to said space without decoupling of the streamer at a termination point.

15 46. An electronics-carrying module substantially as herein described with reference to any one of the embodiments shown in the accompanying drawings.

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